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roll wrapping at least one outer layer over the at least one intermediate layer, the at least one outer layer comprising a metal-containing material; and

connecting the at least one inner and outer layer to the at least one intermediate layer.

22. The method of claim 21, including wherein the at least one inner layer comprises a plurality of layers.

23. The method of claim 22, including wherein the at least one outer layer comprises a plurality of layers.

REMARKS

Claims 1-40 are pending in this application. Applicant has amended claims 1, 4, 9, and 16-23 via the present Amendment to better comply with the Office's requirements.

Specification

The Office has objected to the specification as not containing brief individual descriptions for each drawing figure. In response, applicant has amended page 4 of the specification to provide a brief description for each Figure.

Double Patenting

The Office has advised that should claim 10 (and 17) be found allowable, claim 16 (and 18) will be objected to under 37 C.F.R. § 1.75 as being a substantial duplicate thereof. Applicant respectfully disagrees that claims 10 and 16 as substantial duplicates. Claim 10 depends on claim 7, which includes the limitation that the metal-containing material (of claim 1) is a heavy metal or alloy thereof. Claim 16 includes no such limitation.

As to claims 17 and 18, this rejection is moot as applicant has amended claim 17.

Claim Objections

The Office has objected to claim 4 as being of improper dependent form for failing to further limit the subject matter of a previous claim. This rejection is moot as applicant has amended claim 4.

Rejection – 35 U.S.C. § 112 ¶ 2

The Office has rejected claims 5 and 7 under 35 U.S.C. § 112 ¶ 2 as being indefinite as to what is a “light” and “heavy” metal since there is no official metallurgical standard defining these terms. Applicant respectfully disagrees with this rejection.

A fundamental principle contained in 35 U.S.C. § 112 ¶ 2 is that applicant can be his own lexicographer. He can define in the claims what he regards as his invention essentially in whatever terms, provided those terms are not used in ways that are contrary to the accepted meaning in the art. See M.P.E.P. § 2173.01. The definiteness of claim language must be analyzed not in a vacuum, but in light of the specification. See M.P.E.P. § 2173.02.

In light of these requirements, the Office has not shown that the terminology in claims 5 and 7 does not meet these requirements. Claim 5 (and 7) recite that the metal-containing materials can be a light (or heavy) metal or alloy thereof. The paragraph bridging pages 6 and 7 of the specification describes specific examples of both light and heavy metals.

The Office contends that “light” and “heavy” metal are indefinite as it is not known what specific metals or alloys would (or would not meet) these intended limitations. In light of the examples for each type of metal provided in the specification, the skilled artisan would have understood for certain that the exemplified metals in the specification were respectively light or heavy metals. As well, given the types and numbers of metals disclosed as light and heavy

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metals, the skilled artisan would also understand the other types of metals that would be light and heavy metals.

Thus, the Office has not shown that claims 5 and 7 do not comply with 35 U.S.C. § 112 ¶ 2 and applicant respectfully requests withdrawal of this rejection.

Rejection – 35 U.S.C. § 102(e) over Logan

The Office has rejected claims 1-4, 7, 9-10, 16-20, and 34-46 [*sic:36*] under 35 U.S.C. § 102 (e) as being anticipated by Logan (U.S. Patent No. 6,227,252), for the reasons listed on pages 4-5 of the Office Action. Applicant respectfully traverses this rejection.

Independent claims 1, 16, and 18-20 currently recite a structural member comprising a plurality of contoured inner layers and a plurality of contoured outer layers. Claims 34-36 currently recite a structural member made by a process comprising roll wrapping at least one inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer over the at least one intermediate layer.

As to claims 1-4, 7, 9-10, and 16-20, the Office argues that Logan discloses a hollow contoured structural member comprising a contoured inner layer, an intermediate honeycomb layer, and a contoured outer layer. The Office, however, has not substantiated that Logan teaches the limitations recited in claims 1-4, 7, 9-10, and 16-20. As detailed above, these claims include the limitation that the structural member has a plurality of contoured inner layers and a plurality of contoured outer layers. The Office has not shown that Logan discloses either of these limitations. Indeed, it would be difficult for the Office to show that Logan discloses such limitations in light of the fact that the structural member of Logan contains inner pipe 13 and outer pipe 14, both of which contain a single, solid layer.

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As to claims 34-36, the Office recognizes that Logan does not disclose the same process steps, but argues that these claims are product claims and where there is a substantially similar product, the burden of proof is shifted to the applicant to establish that his product is patentably distinct. Applicant respectfully disagrees with the Office's rationale. M.P.E.P § 2113 requires that once the Office provides a rationale showing that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, only then does the burden shift to the applicant to come forward with evidence of the unobvious difference between the claimed product and the prior art. As noted above, the Office has not come forward with a rationale showing that the claimed product appears to be the same as or similar to the structural member of Logan.

Despite the Office's failure to come forward with such a rationale, applicant submits the following evidence of the superiority of the product formed by the claimed process. The claimed process requires roll wrapping the at least one inner layer, roll wrapping the at least one intermediate layer, and then roll wrapping the at least one outer layer. By contrast, the outer pipe 14 of Logan is "shrunk fit" over honeycomb material by heating to expand the pipe, positioning, and then cooling to shrink the pipe, as described in lines 12-18 of column 4. An alternative method splits the outer pipe, positions the outer pipe, and then welds the outer pipe together, as described in lines 30-37 of column 4. Both of these processes induce changes in the physical characteristics of the metal of the outer pipe of Logan via the heating/cooling or cutting process.

For the above reasons, the Office has not substantiated that Logan anticipates claims 1-4, 7, 9-10, 16-20, and 34-36. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(b) over Wilkinson

The Office has rejected claims 1-4, 16-20, and 34-36 under 35 U.S.C. § 102 (b) as being anticipated by Wilkinson (U.S. Patent No. 4,161,231), for the reasons listed on page 5 of the Office Action. Applicant respectfully traverses this rejection.

Independent claims 1, 16, and 18-20 currently recite a structural member comprising a plurality of contoured inner layers and a plurality of contoured outer layers. Claims 34-36 currently recite a structural member made by a process comprising roll wrapping at least one inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer over the at least one intermediate layer.

As to claims 1-4 and 16-20, the Office argues that Wilkinson discloses a hollow contoured structural member comprising a contoured inner layer, an intermediate honeycomb layer, and a contoured outer layer. The Office, however, has not substantiated that Wilkinson teaches the limitations recited in claims 1-4 and 16-20. As detailed above, these claims include the limitation that the structural member has a plurality of contoured inner layers and a plurality of contoured outer layers. The Office has not shown that Wilkinson discloses either of these limitations. Indeed, it would be difficult for the Office to show that Wilkinson discloses such limitations in light of the fact that the structural member contains outer skin plates 26a which are constructed from a number of pieces with each piece covering a respective honeycomb member 24, thereby forming a single, non-continuous layer.

As to claims 34-36, the Office recognizes that Wilkinson does not disclose the same process steps, but argues that these claims are product claims and where there is a substantially similar product the burden of proof is shifted to the applicant to establish that his product is patentably distinct. Applicant respectfully disagrees with the Office's rationale. M.P.E.P §

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2113 requires that once the Office provides a rationale showing that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to the applicant to come forward with evidence of the unobvious difference between the claimed product and the prior art. As noted above, the Office has not come forward with a rationale showing that the claimed product appears to be the same as or similar to the structural member of Wilkinson.

Despite the Office's failure to come forward with such a rationale, applicant submits the following evidence of the superiority of the product formed by the claimed process. The claimed process requires roll wrapping the at least one inner layer, roll wrapping the at least one intermediate layer, and then roll wrapping the at least one outer layer. By contrast, the structural member of Wilkinson is formed from separate outer skin plates 26a constructed from a number of pieces with each piece covering a respective honeycomb member 24. Thus, the outer skin 26 is formed of a non-continuous layer of numerous pieces.

For the above reasons, the Office has not substantiated that Wilkinson anticipates claims 1-4, 16-20, and 34-36. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(a) over Ohrn

The Office has rejected claim 14 under 35 U.S.C. § 102 (a) as being anticipated by Ohrn (U.S. Patent No. 6,116,290), for the reasons listed on page 6 of the Office Action. Applicant respectfully traverses this rejection.

Claim 14 recites a structural member comprising at least one contoured inner layer comprising a composite material, at least one intermediate layer having a ribbed structure, and at least one contoured outer layer comprising a metal-containing material. The Office argues that Ohrn discloses a hollow contoured structural member comprising a contoured inner layer

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comprising a composite material, an intermediate ribbed layer, and a contoured outer layer. The Office, however, has not substantiated that Ohrn teaches the limitations recited in claim 14, notably that the structural member has at least one inner layer and at least one intermediate layer having a ribbed structure.

Ohrn discloses an outer pipe 16 with a liner 14. The liner 14 is provided with a plurality of passages 18. See column 2, lines 38-48. The liner 14 is inserted inside of outer pipe by swage lining, e.g., reducing the diameter of the liner 14 using tension, pulling it through the outer pipe 16, and then releasing the tension so the liner fits within the outer pipe. See, column 3, lines 12-27. In light of this disclosure, the skilled artisan would recognize that the passages 18 are part of liner 14. As such, the skilled artisan would not have considered the passages 18 to be at least one intermediate layer as required in claim 14.

For the above reasons, the Office has not substantiated that Ohrn anticipates claim 14. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(b) over Mann

The Office has rejected claims 1-9, 11, 21, and 34-35 under 35 U.S.C. § 102 (b) as being anticipated by Mann (U.S. Patent No. 3,332,446), for the reasons listed on page 6 of the Office Action. Applicant respectfully traverses this rejection.

Independent claim 1 currently recites a structural member comprising a plurality of contoured inner layers and a plurality of contoured outer layers. Claim 21 currently recites a process for making a structural member comprising roll wrapping at least one inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer over the at least one intermediate layer. Claims 34-35 currently recite a structural member made by a process comprising roll wrapping at least one inner layer

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over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer over the at least one intermediate layer.

As to claims 1-9 and 11, citing Figure 1-2 the Office argues that Mann discloses a hollow contoured structural member comprising a contoured inner layer, an intermediate wrapped ribbed structure layer, and a contoured outer layer. The Office, however, has not substantiated that Mann teaches the limitations recited in claims 1-9 and 11. As detailed above, these claims include the limitation that the structural member has a plurality of contoured inner layers and a plurality of contoured outer layers. The Office has not shown that Mann discloses either of these limitations. Indeed, it would be difficult for the Office to show that Mann discloses such limitations in light of the fact that inner tubing 12 and the outer tubing 16 are formed using a forming die, e.g., a flat sheet of tubing is pulled through a suitable form which bends it into a cylindrical configuration after which the edges of the cylinder are butt welded together. See column 2, lines 50-62 and column 3, lines 30-40.

As to claims 34-35, the Office recognizes that Mann does not disclose the same process steps, but argues that these claims are product claims and where there is a substantially similar product the burden of proof is shifted to the applicant to establish that his product is patentably distinct. Applicant respectfully disagrees with the Office's rationale. M.P.E.P § 2113 requires that once the Office provides a rationale showing that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to the applicant to come forward with evidence of the unobvious difference between the claimed product and the prior art. As noted above, the Office has not come forward with a rationale showing that the claimed product appears to be the same as or similar to the structural member of Mann.

Despite the Office's failure to come forward with such a rationale, applicant submits the following evidence of the superiority of the product formed by the claimed process. The claimed process requires roll wrapping the at least one inner layer over a substrate, roll wrapping the at least one intermediate layer, and then roll wrapping the at least one outer layer. By contrast, the structural member of Mann is formed using a forming die. After the forming die, both the inner tubing 12 and the outer tubing 16 are subjected to a shaping or convolution chasing machine, which gives it a spiraling indentation. As a result of such processes, the inner and outer tubing would have physical characteristics different than those imparted via a roll wrapping process.

For the above reasons, the Office has not substantiated that Mann anticipates claims 1-9, 11, 21, and 34-35. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(b) over Frease

The Office has rejected claims 1-4 and 34-35 under 35 U.S.C. § 102 (b) as being anticipated by Frease (U.S. Patent No. 1,677,714), for the reasons listed on page 7 of the Office Action. Applicant respectfully traverses this rejection.

Independent claim 1 currently recites a structural member comprising a plurality of contoured inner layers and a plurality of contoured outer layers. Claims 34-35 currently recite a structural member made by a process comprising roll wrapping at least one inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer over the at least one intermediate layer.

As to claims 1-4, citing Figure 1-5, the Office argues that Frease discloses a hollow contoured structural member comprising a contoured inner layer, an intermediate wrapped ribbed structure layer, and a contoured outer layer. The Office, however, has not substantiated that Frease teaches the limitations recited in claims 1-4. As detailed above, these claims include the

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limitation that the structural member has a plurality of contoured inner layers and a plurality of contoured outer layers. The Office has not shown that Frease discloses any of these limitations. Indeed, it would be difficult for the Office to show that Frease discloses such limitations in light of the fact that none of Figures 1-5 illustrates more than a single layer for the inner tube 12 and the outer tube 11.

As to claims 34-35, the Office recognizes that Frease does not disclose the same process steps, but argues that these claims are product claims and where there is a substantially similar product the burden of proof is shifted to the applicant to establish that his product is patentably distinct. Applicant respectfully disagrees with the Office's rationale. M.P.E.P § 2113 requires that once the Office provides a rationale showing that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to the applicant to come forward with evidence of the unobvious difference between the claimed product and the prior art. As noted above, the Office has not come forward with a rationale showing that the claimed product appears to be the same as or similar to the structural member of Frease.

Despite the Office's failure to come forward with such a rationale, Applicant submits the following evidence of the superiority of the product formed by the claimed process. The claimed process requires roll wrapping the at least one inner layer over a substrate, roll wrapping the at least one intermediate layer, and then roll wrapping the at least one outer layer. By contrast, the structural member of Frease is formed using by any number of sheets, plates, or strips secured to each other by rivets, welding, or other fastening means and that may be perforated or corrugated. See column 1, lines 47-52. As a result of such processes, the inner and outer tubes would have physical characteristics different than those imparted via a roll wrapping process.

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For the above reasons, the Office has not substantiated that Frease anticipates claims 1-9, 11, 21, and 34-35. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 103 over Logan

The Office has rejected claims 1-40 under 35 U.S.C. § 103 as being unpatentable over Logan for the reasons listed on pages 8-9 of the Office Action. Applicant respectfully traverses this rejection.

Independent claims 1, 16, and 18-20 currently recite a structural member comprising a plurality of contoured inner layers and a plurality of contoured outer layers. Claim 12 (and 14) respectively recite a structural member comprising at least one metal-containing (or composite) contoured inner layer and at least one composite (or metal containing) contoured outer layer. Claims 21 and 31-33 (and product-by-process claims 34-36) currently recite a process for making a structural member by roll wrapping at least one inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer over the at least one intermediate layer. Claims 37-38 (and product-by-process claims 39-40) respectively recite a process for making a structural member by providing at least one metal-containing (or composite) inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one composite (or metal-containing) outer layer over the at least one intermediate layer.

As to claims 1, 16, and 18-20, applicant has detailed above why the Office has not substantiated that Logan teaches the limitations in these claims. Nor has the Office shown that the skilled artisan would have considered such limitations obvious in light of the disclosure of Logan.

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As to claims 12 and 14, the Office recognizes that Logan only discloses grade X65 steel, but argues that it would have been obvious to use any conventional materials in place of the steel. The Office takes Official Notice that light metals, composite materials, and stainless steels are conventionally used in piping and, therefore, using them in Logan's structural configuration would have been obvious. Applicant respectfully disagrees with the Office's rationale.

To meet the limitations recited in claims 12 and 14, the Office is arguing that it would have been obvious to replace the inner or outer steel pipe with a composite material because both composite materials and stainless steels are used in piping. But Logan discloses that not just any piping material can be used in his invention. Logan discloses that the inner and outer pipes are made of the standard materials that are "routinely used to construct submerged pipelines in shallower water depths; e.g., API Grade X65 steel pipe or equivalent material." See column 3, lines 20-23. Thus, Logan specifies that only certain types of materials can be employed because of the environment in which his invention is used. In light of this disclosure, the skilled artisan would not have been motivated to use just any material, but certain types of materials. So, even if the Office's Official Notice is correct (a fact which Applicant does not concede), it does not establish that composite materials could be used in place of the API Grade X65 steel pipe described by Logan.

As to the method claims requiring roll wrapping, the Office maintains that a method of wrapping layers and using a mandrel is a conventional method of forming laminated tubular structures in the art and would not be a patentable distinction over Logan's method. Applicant also respectfully disagrees with this rationale. The Office has not shown that roll wrapping processes for metal are conventional. The Office—at most—argues that roll wrapping for laminated structures is known. Even if true (a fact which applicant does not concede), this does

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not substantiate that roll wrapping for metal structures is known. Absent such a showing, it would not have been obvious to the skilled artisan to use a roll wrapping process to make Logan's structural member.

As to the product claims containing the limitation that the product is made by a roll wrapping process, the Office recognizes that Logan does not disclose the same process steps, but argues that these claims are product claims and where there is a substantially similar product the burden of proof is shifted to the applicant to establish that his product is patentably distinct. Applicant respectfully disagrees. As noted above, the Office has not come forward with a rationale showing that the claimed product made by a roll wrapping process appears to be the same as or similar to the structural member of Logan. Despite such a failure, applicant notes that a roll wrapping process places successive layers during its formation process. By contrast, the process of Logan is "shrunk fit" over honeycomb material by heating to expand the pipe, positioning, and then cooling to shrink the pipe, as described in lines 12-18 of column 4. An alternative method splits the outer pipe, positions the outer pipe, and then welds the outer pipe together, as described in lines 30-37 of column 4. Both of these processes induce changes in the physical characteristics of the metal of the outer pipe via the heating/cooling or cutting process.

For the above reasons, the Office has not substantiated that the skilled artisan would have considered claims 1-40 obvious in light of Logan. Accordingly, applicant requests withdrawal of this rejection.

Rejection – 35 U.S.C. § 103 over Frease

The Office has rejected claims 1-40 under 35 U.S.C. § 103 (a) as being unpatentable over Frease (U.S. Patent No. 1,677,714), for the reasons listed on pages 9-10 of the Office Action. Applicant respectfully traverses this rejection.

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As noted above, independent claims 1, 16, and 18-20 currently recite a structural member comprising a plurality of contoured inner layers and a plurality of contoured outer layers. Claim 12 (and 14) respectively recite a structural member comprising at least one metal-containing (or composite) contoured inner layer and at least one composite (or metal containing) contoured outer layer. Claims 21 and 31-33 (and product-by-process claims 34-36) currently recite a process for making a structural member by roll wrapping at least one inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer over the at least one intermediate layer. Claims 37-38 (and product-by-process claims 39-40) respectively recite a process for making a structural member by providing at least one metal-containing (or composite) inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one composite (or metal-containing) outer layer over the at least one intermediate layer.

As to claims 1, 16, and 18-20, applicant has detailed above why the Office has not substantiated that Frease teaches the limitations in these claims. Nor has the Office shown that the skilled artisan would have considered such limitations obvious in light of the disclosure of Frease.

As to claims 12 and 14, the Office recognizes that Frease does not disclose the claimed materials, but argues that it would have been obvious to use any conventional materials in place of those disclosed by Frease. The Office takes Official Notice that light metals, composite materials, and stainless steels are conventionally used in piping and, therefore, using them in Frease's structural configuration would have been obvious. Applicant respectfully disagrees with the Office's rationale.

To meet the limitations recited in claims 12 and 14, the Office is arguing that it would have been obvious to replace the metal of Frease with a composite material because both composite materials and stainless steels are used in piping. But Frease discloses that not just any material can be used in his invention. Frease discloses that his structural members are made of materials that are secured to each other by “rivets, welding or other fastening means; and/or may be perforated, made of expandable metal, corrugated, or otherwise formed.” See column 1, lines 50-54. As well, Frease discloses that the structural members are “adapted to be manufactured by sheet metal channel forming equipment.” See column 2, line 106 through column 3, line 2. Thus, Frease specifies that only certain types of materials can be employed because of the method in which they are made. In light of this disclosure, the skilled artisan would not have been motivated to use just any material, but only those types of materials that can be made in the manner described by Frease. So, even if the Office’s Official Notice is correct (a fact which applicant does not concede), it does not establish that composite materials could be used in place of the metal described by Logan.

As to the method claims requiring roll wrapping, the Office maintains that a method of wrapping layers and using a mandrel is a conventional method of forming laminated tubular structures in the art and would not be a patentable distinction over Frease’s method. Applicant respectfully disagrees with this rationale. The Office has not shown that roll wrapping processes for metal are conventional. The Office—at most—argues that roll wrapping for laminated structures is known. Even if true (a fact which applicant does not concede), this does not substantiate that roll wrapping for metal structures is known. Absent such a showing, it would not have been obvious to the skilled artisan to use a roll wrapping process to make Frease’s structural member.

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As to the product claims containing the limitation that the product is made by a roll wrapping process, the Office recognizes that Frease does not disclose the same process steps, but argues that these claims are product claims and where there is a substantially similar product the burden of proof is shifted to the applicant to establish that his product is patentably distinct. Applicant respectfully disagrees. As noted above, the Office has not come forward with a rationale showing that the claimed product made by a roll wrapping process appears to be the same as or similar to the structural member of Frease. Despite such a failure, applicant notes that a roll wrapping process places successive layers during its formation process. By contrast, the process of Frease is made by a sheet metal channel forming equipment and process. As well, the structural member of Frease is formed using by any number of sheets, plates, or strips secured to each other by rivets, welding, or other fastening means and that may be perforated or corrugated.

For the above reasons, the Office has not substantiated that the skilled artisan would have considered claims 1-40 obvious in light of Frease. Accordingly, applicant requests withdrawal of this rejection.

Rejection – 35 U.S.C. § 103 over Cappa

The Office has rejected claims 1-40 under 35 U.S.C. § 103 as being unpatentable over Cappa (U.S. Patent No. 5,848,767) for the reasons listed on pages 10-11 of the Office Action. Applicant respectfully traverses this rejection.

As noted above, Independent claims 1, 16, and 18-20 currently recite a structural member comprising a plurality of contoured inner layers of a metal-containing material and a plurality of contoured outer layers of a metal-containing material. Claim 12 (and 14) respectively recite a structural member comprising at least one metal-containing (composite) contoured inner layer and at least one composite (metal containing) contoured outer layer. Claims 21 and 31-33 (and

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product-by-process claims 34-36) currently recite a process for making a structural member by roll wrapping at least one inner layer of a metal-containing material over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer of a metal-containing material over the at least one intermediate layer. Claims 37-38 (and product-by-process claims 39-40) respectively recite a process for making a structural member by providing at least one metal-containing (or composite) inner layer over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one composite (or metal-containing) outer layer over the at least one intermediate layer.

The Office recognizes that Cappa differs from the claims mainly in that Cappa uses a metal honeycomb core with composite inner and outer layers while the claims generally require that at least one (or both) of the inner and outer layers is formed of a metal-containing material. The Office, however, argues that it would have been obvious for the skilled artisan to have used a metal-containing material in place of the composite material because (1) Cappa discloses in the Background section that manufacturers have been substituting composite materials for parts of aluminum structural elements to decrease weight and meet other spacecraft requirements and (2) the Office takes Official Notice that using metal for the face sheets in structural honeycomb articles is conventional in the art.

Applicant respectfully disagrees with the Office's position. Even if the Office's Official Notice is taken as true (a fact that applicant does not concede), this merely shows that it is known that metal-containing materials *can* be used. It does not, however, show *why* the skilled artisan would have motivated to replace the composite material used in the inner and outer layer of Cappa with a metal-containing material. And *prima facie* obviousness can not be established by

merely showing that the proposed modification can be done unless the prior art suggests the desirability of the modification. M.P.E.P. § 2143.01.

Moreover, a detailed analysis of the background section of Cappa shows that the skilled artisan would not have been motivated to make such a substitution. In column 1, Cappa describes that manufacturers of spacecraft frames seek to minimize the weight of the frame. (See col. 1, lines 37-39). As well, the frames should be thermally conductive. (See col. 1, lines 40-45). To meet this thermally conductive requirements, a majority of the frame is typically made from aluminum. (See col. 1, lines 46-48). Despite being made from aluminum, spacecraft frames are often bulky, heavy, and difficult to manage. (See col. 1, lines 50-54). Thus, some manufacturers have tried to address the problems of weight and bulkiness by substituting composite pieces for the aluminum. (See col. 1, lines 55-57).

Thus, in light of this description in Cappa, the skilled artisan would have understood that the manufacturers are moving toward substituting composite materials for aluminum in the inner and outer face sheets of spacecraft frames. This is exactly the opposite of the Office's proposed modification, e.g., substituting metal (or aluminum) for the disclosed composite material. Thus, Cappa *teaches away* from the Office's proposed modification, indicating that the proposed modification would not have been obvious to the skilled artisan.

For the above reasons, the Office has not substantiated that the skilled artisan would have considered claims 1-40 obvious in light of Cappa. Accordingly, applicant requests withdrawal of this ground of rejection.

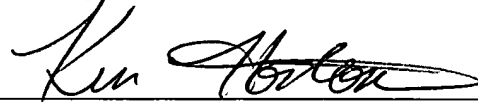
CONCLUSION

For the above reasons, applicant respectfully requests the Office to withdraw the pending grounds of rejection and allow the pending claims.

If there is any fee due in connection with the filing of this Amendment, including a fee for any extension of time not accounted for above, please charge the fee to our Deposit Account No. 18-0013.

Respectfully Submitted,

By



KENNETH E. HORTON

Reg. No. 39,481

Date: October 15, 2001

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